

Island Arks Symposium III Program & Guide



NATIONAL CO-ORDINATION



LOCAL CO-ORDINATION



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Venue & Locality Maps



Island Arks 3 Hobart Feb 2014

Conference at Baha'i Centre.
See instructions below on how to access.

Conference Dinner 12 Feb
6.30pm Courtyard Tasmanian
Museum & Art Gallery,
entrance off Macquarie Street,
vehicle parking at Dunn Place.

'Desert Island Book Club' 11
Feb 6.30 – 8pm at Lark Whiskey
Distillery, 14 Davey Street.

Icebreaker Function Monday 10
Feb 5.30 – 7.30pm at Hobart
Function & Conference Centre,
end of Elizabeth Street Pier.

All venues are within easy
walking distance of city centre
and Salamanca.

Access to the Baha'i Centre of Learning



By Vehicle

There are three main vehicle approach routes to the BCL: via Macquarie St (heading north), from the Tasman Hwy (heading south), or from Brooker Ave (east-bound).

When approaching Tasman Highway **via Macquarie St** remain in the second lane from the left as there is a compulsory left turn into the Brooker Highway in the left-hand lane.

1. Exit via the slip road on the left, immediately past the set of traffic lights at the major intersection of Brooker Ave, Tasman Hwy, Macquarie and Davey St.

If you're coming down **via the Tasman Highway**, you'll traverse the ABC building on your left before you can get to the entrance of the BCL.

1. After the Tasman Bridge, take the right-sided city-bound lanes marked City Centre North Hobart on the Tasman Hwy.

2. Staying in the left-most lane turn right at the lights into Liverpool St and change over to the left-most lane.

3. At the roundabout lights [the green circle of trees on the map below], turn left into Brooker Ave [marked A6 on the map], until you reach the next set of lights at the major intersection.

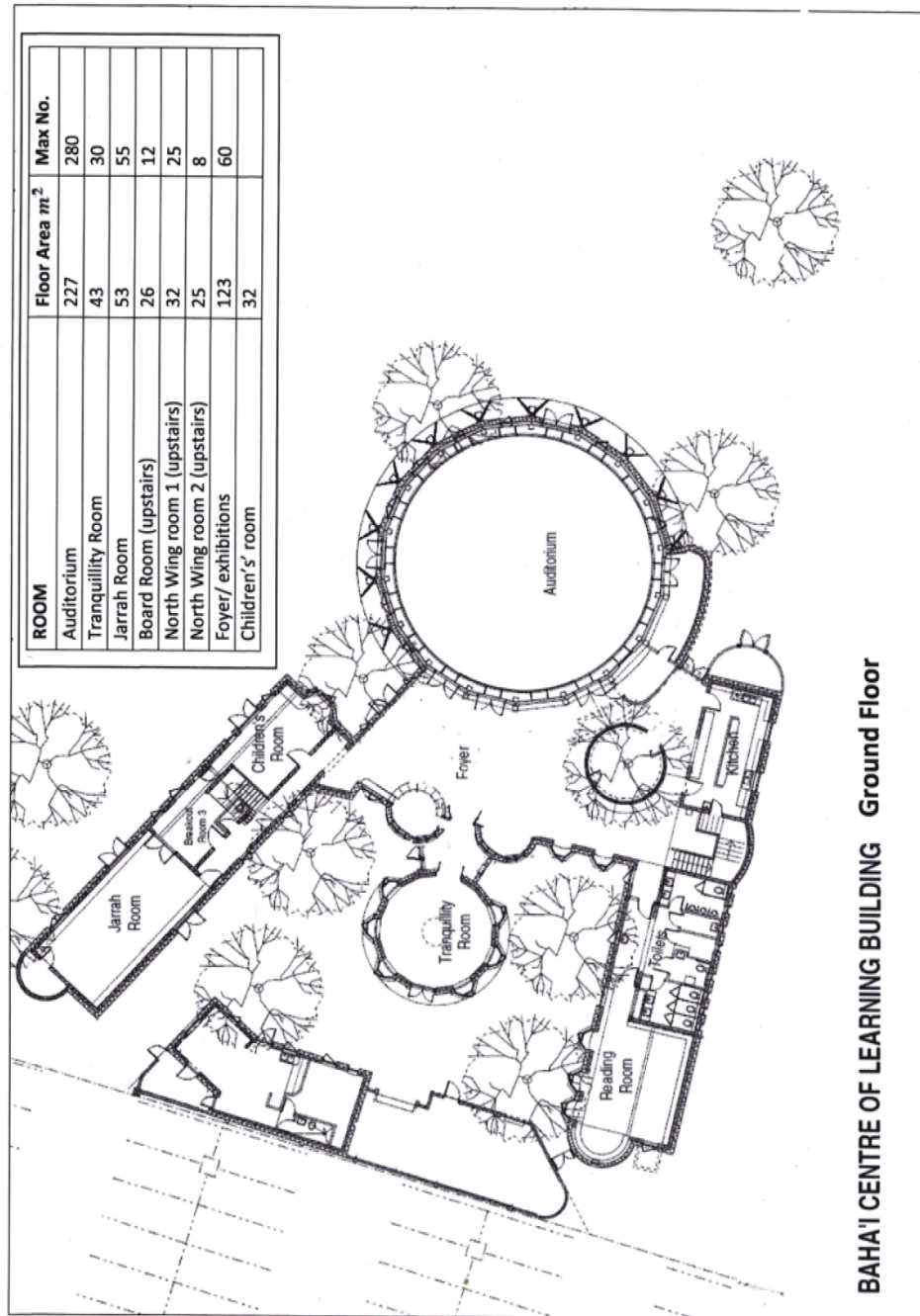
4. At these lights turn left back onto Tasman Hwy, you'll be facing the direction you initially came, and take the slip road immediately to your left.

Pedestrian access

From the city follow Collins Street to the Brooker Highway, cross the highway where you'll find a set of stairs directly accessible from the sidewalk underneath the Cypress trees.

Climb the stairs where you'll enter the BCL premises; turn right following the BCL building around and enter through the first doorway.

Or continue around to the front of the building and enter through the main double-door entrance.



BAHA'I CENTRE OF LEARNING BUILDING Ground Floor

Program Day 1

Tuesday 11th February

	Tuesday 11 th February
0900	Housekeeping Welcome to Country; Heather Sculthorpe Tasmanian Aboriginal Centre Opening; Peter Mooney Tasmanian Parks and Wildlife Service Derek Ball – Island Arks Australia
0930	Alan Saunders – Keynote “Building capacity to eradicate invasive species from islands”.
1000	Morning Tea (Chair - Derek Ball)
1030	Andry Sculthorp and Ruth Langford– Invited Speakers “Aboriginal Land Management in lutruwita: Country is a Story place”
1055	<u>Ian Kerr</u> , Mamarika, P. & Yantarrnga, J. “Groote Eylandt Indigenous Protected Area I- Management through Culture & Science”
1115	Clyde Mansell & Nathan Maynard “Yula, yolla, moon birds and mutton birds: changing faces of birding in Aboriginal Tasmania”.
1135	<u>Rachel Paltridge</u> & Allen, S. “Restoring island ecosystems in the Gulf of Carpentaria – response of small mammals to cat control”.
1155	Palmer, R., Pyke, D., Meek, P, & Morris, K. “Native mosaic-tailed rats muscle-up on Iwany (Sunday Island, Kimberley) displacing invasive black rats”.
1220	Lunch (Chair – David Priddel)
1320	<u>Craig Elliot</u> , Stephen Harris & Matthew Marrison “That’s not an island, this is an island! Managing a large scale island eradication”
1340	<u>Michael Nash</u> “Feral Goat Eradication on Pelorus Island (Palm Island Group), NQ”.
1400	Jason Wimmer & <u>Paul Roe</u> “Listening to the Country: Biodiversity monitoring on Groote Eylandt using Acoustic Sensor”

1420	<u>Dorian Morro</u> "Managing artificial light emissions for turtles and people on islands: lessons from the Gorgon Project, Barrow Island."
1440	<u>Leslie Frost</u> "Managing the risks of oil spill at Macquarie Island"
1500	Afternoon Tea (Chair – Margaret Christian)
1530	<u>Ben Thomas</u> "Argentine Ants on Norfolk Island – Eradication or control? The development of an intensive monitoring program to inform management decisions".
1550	<u>Abigail Smith</u> , Luis Ortiz-Catedral "Tasman Parakeets – nesting biology, ecology and conservation of Australia's third most endangered parrot."
1610	<u>Nicholas Carlile</u> & David Priddel "Turn back time: The proposed re-introduction of Providence Petrel to Norfolk Island"
1630	<u>Jarrod Hodgson</u> & Clarke, R.H. – "Managing a stinging reality: tropical fire ant <i>Solenopsis geminata</i> control at Ashmore Reef"
1650	Close & Book Club at 6:30pm

0900 HOUSEKEEPING

0905 Welcome to Country; Ruth Langford Tasmanian Aboriginal Centre.

0915 Opening; Peter Mooney Tasmanian Parks and Wildlife Service

0925 Island Arks Australia; Derek Ball

0930 Key Note Presentation; Alan Saunders: Building capacity to eradicate invasive species from islands.

1030 Invited Presentation; Andry Sculthorp and Ruth Langford: Aboriginal Land Management in Iutruwita: Country is a Story place.

1055 Groote Eylandt Indigenous Protected Area I- Management through Culture & Science; Kerr, I.W., Mamarika, P. & Yantarrnga J.

At 200,000 ha, Groote Eylandt is one of Australia's largest islands. As well as supporting the densest area of marine turtle nesting in the Northern Territory, it has a significant dugong population and extensive sea grass beds and coral reefs. The terrestrial environment includes 900 plant species and 330 vertebrate species. There are twelve threatened species and at the time of writing the Eylandt is cane toad free and unlike much of northern Australia has no history of grazing and has no large feral animals such as horses, cattle, buffalo, donkeys or pigs) This has resulted in an environment with few weeds and a relatively low fire intensity.

The Eylandt has a rich cultural history with 14 clans speaking the Anindilyakwa language and have an intricate series of songlines that connect to Arnhem land. It is the task of the Anindilyakwa rangers to manage the conservation values of the land & sea in conjunction with the cultural aspirations of the traditional owners.

1115 “Yula, yolla, moon birds and mutton birds: changing faces of birding in Aboriginal Tasmania”; Clyde Mansell & Nathan Maynard

1135 Restoring island ecosystems in the Gulf of Carpentaria – response of small mammals to cat control; Rachel Paltridge, Stanley Allen & Sean Fitzpatrick.

West Island occurs within the Sir Edward Pellew Archipelago located in the Gulf of Carpentaria. Until the early 1990s it supported 5 species of native mammals. Since cats were introduced to the island in 1994, 2451 trap-nights surveyed between 2003 and 2010 failed to detect a single native mammal and it was feared that all small mammals had been extinguished.

The li-Anthawirriyarra Sea Rangers and Yanyuwa Traditional Owners commenced a cat control project on West Island in 2011 in an attempt to restore ecosystems across the 130km² island. For 3 consecutive years an annual aerial and ground baiting program has systematically distributed 5000 baits across West Island. Tracking transects and camera traps are used to monitor cats.

Baiting commenced in a year of exceptionally high rainfall and initially produced little impact on cat abundance, however the 2012 baiting resulted in a significant decrease in cat numbers. This was followed by a resurgence in the population of Delicate Mice with 5% trap success in 2012 and 11% in 2013. During this period Delicate Mice have decreased in abundance on another island where no predator control occurred. A second species (Water Rat) was also detected on West Island in 2013.

1320 That’s not an island, this is an island! Managing a large scale island eradication; Craig Elliot; Stephen Harris & Matthew Marrison.

In 2001 an ambitious effort to prevent the European Red Fox from establishing in Tasmania was commenced after increased levels of evidence of fox presence indicated the emerging threat of a dispersed fox population. This eradication program is a significant conservation effort and is unique in attempting eradication of foxes before recognised establishment has occurred and for the size of the operational area being

targeted given Tasmania is an island of over 68 000 km².

As a consequence of the size and complexity of the eradication, a number of significant operational challenges have been faced that necessitated an adaptive management approach. Equally challenging has been maintaining community support for eradication of a threat that is largely unseen, both in terms of the animal itself and its impact, concern about the use of 1080 baits as the primary eradication tool, and the cultivation of public doubt by a small number of individuals about the evidence of fox presence and eradication activities.

With a window of more than two years since new evidence of foxes has been detected, the Program is extremely optimistic that success can be achieved, but its experiences present a number of key lessons for eradication projects on inhabited islands or involving large-scale long-term operations.

1340 Feral Goat Eradication on Pelorus Island (Palm Island Group), NQ;

Michael Nash

Pelorus Island is a council managed island off the coast of the Hinchinbrook coastline. Due to a lack of understanding by LG as to the NRM issues that existed, compounded by the logistical difficulties in accessing the island on a regular basis, the island was largely left to its own devices.

Through partnerships developed at a local level; Terrain NRM and Hinchinbrook Shire Council sort to value add on an existing opportunities with QPWS, who received funding through QG to eradicate goats on nearby Orpheus Island National Park.

Although aerial shooting has been relatively successful on Orpheus Island, the more rugged terrain and heavier tree cover on Pelorus Island has inhibited success. With some additional support now from Biosecurity Qld., HSC and Terrain are investigating alternative means of control including yard traps using water to attract the goats; and since Pelorus Island is not National Park, the use of dogs is also being considered.

1400 Listening to the Country: Biodiversity monitoring on Groote Eylandt using acoustic sensor; Jason Wimmer, Paul Roe, Anindilyakwa Land Council.

Groote Eylandt is an area of great environmental significance, with a number of endangered and vulnerable species such as the Northern Quoll (*Dasyurus hallucatus*) and the Northern Hopping-mouse (*Notomys aquilo*). Groote Eylandt is also currently a rare cane toad free habitat. Cane toads present a significant threat to Northern Quolls (and many other native species), with populations in Kakadu national park collapsing dramatically following their arrival. Should cane toads establish on Groote Eylandt, the Northern Quoll population is likely to suffer a similar fate.

The Anindilyakwa Land Council Ranger group have developed an acoustic sensing biodiversity monitoring program to detect cane toads, and to map the island's unique biodiversity. Acoustic sensors are deployed Groote Archipelago, capturing an indelible record of vocal species such as birds and frogs which can then be analysed. Rangers use automated analysis tools to scan for the presence of cane toads, and manual analysis techniques to identify bird and frog species. These species are annotated in the Anindilyakwan language to preserve and maintain indigenous culture and heritage. This presentation demonstrates the advantages of combining indigenous traditional knowledge and science and technology to manage a unique and valuable resource.

1420 Managing artificial light emissions for turtles and people on islands: lessons from the Gorgon Project, Barrow Island; Dorian Morro.

People increasingly use offshore islands, and with them comes the need for artificial light. The disruption to sea turtles' vision and survival caused by lighting associated with development in areas where they nest has long been recognised. The development of large liquefied natural gas plants with their intensive lighting on the northern Australian coastline has raised new challenges which increase the need to improve our understanding of the management measures and risks of artificial lighting on mature turtles as well as turtle hatchlings. On Barrow Island, artificial light emissions are balanced between conservation needs (marine turtle protection) and workforce safety. The Gorgon Project has now demonstrated approaches to reduce artificial light emissions by adopting engineering design considerations as well as environmental stewardship and environmental monitoring considerations.

The engineering principles of design focus on a LLOS approach (lights Low, Long wavelengths, Off the beach, Shielded). Environmental stewardship increases light management awareness among workforce on site, where the onus becomes one of ownership of the requirements by workforce supervisors and personnel. This lighting culture ensures the requirements of environmental commitments are cascaded across the construction workforce. Finally, monitoring of low light levels as seen from beaches, in parallel to hatchling onshore behaviour, enable Chevron to quantify the levels of artificial light and whether these are influencing hatchling behaviours and risks to predation. Collectively, these practices have application to managing artificial light emissions on other islands where people interface with sensitive wildlife.

1440 Managing the risks of oil spill at Macquarie Island; Leslie Frost.

This paper will describe the risks in delivering fuel to Macquarie Island, current spill response strategies and the need to develop an oiled wildlife response capability for both the marine and terrestrial environments. It will also touch on the jurisdictional issues as well as oil spill response in remote island environments.

1530 Argentine ants on Norfolk Island – eradication or control? The development of an intensive monitoring program to inform management decisions; Ben Thomas.

The presence of Argentine ant *Linepithema humile* on Norfolk Island poses a major risk to the Islands unique biodiversity and its fragile economy. Confirmed to be present on the Island in 2005 it was not until 2008 that an eradication program was initiated. This invasive and aggressive species of tramp ant has since been found in 11 distinct zones across the Island. In five years the eradication program has significantly reduced, fragmented and contained all of the 11 infestations but is yet to eradicate one. The absence of a thorough monitoring program is one potential reason why the total number of infestations has not yet been reduced. After the cessation of federal government funding the program is now at a critical point and the question must now be asked: are we running an Eradication Program or a Control Program? The answer lies partly in the amount of available funding but the question can not be completely

answered without the results of a vigorous monitoring program now being implemented for the first time on Norfolk Island. An intensive program using baited lures is allowing us to accurately delineate the boundary of each infestation of Argentine ant which then allows us to determine the exact area requiring treatment. It will also allow us to track the outcomes of different treatment methodologies which have been tested on a small scale. The data from this program along with a cost – benefit analysis will inform our decision to either control or eradicate the Argentine ant from Norfolk Island.

1550 Tasman parakeets – nesting biology, ecology and conservation of Australia’s third most endangered parrot; Abigail Smith & Luis Ortiz-Catedral.

Recent surveys of Tasman parakeets (*Cyanoramphus cooki*) conducted throughout Norfolk Island National Park have indicated that the population is in decline and is now at a critical level. Various techniques were employed to assess the population including nest inspections, distance sampling and general observations. Locally known as the Green parrot, this critically low population of between 46-92 individuals makes this the rarest *Cyanoramphus* species in the South Pacific and among the three rarest parrots within Australia. In addition to the risks associated with a critical population size there are issues of predation, a sex bias towards males, a shortage of safe nesting sites, competition from introduced birds and the risk of demographic stochasticity. Emergency actions aimed at increasing the size and extent of this population are needed urgently. The provision of safe nesting sites, an increase to the number of females and breeding pairs, the reduction of threats, and securing an insurance population need to be implemented in the short term. Phillip Island, a small island off the southern coast of Norfolk Island is being assessed as a site for translocation. Phillip Island is part of the Norfolk Island National Park and is significant due to the absence of mammalian predators. This island can provide an ‘ark’ a safe location to establish a second population of Tasman parakeets and downgrade the extinction risk of the species.

1610 Turn back time: the proposed reintroduction of Providence Petrel to Norfolk Island; Nicholas Carlile and David Preddel.

The Providence Petrel (*Pterodroma solandri*) is an IUCN Vulnerable migratory seabird species with nesting restricted to Lord Howe Island (32,000 pairs) and on Phillip Island.

1630 Managing a stinging reality: tropical fire ant *Solenopsis geminata* control at Ashmore Reef”Jarrod Hodgson & Clarke, R.H.

Ants have many traits that, along with human assisted dispersal, have made them highly successful invaders. This study investigated the distribution and abundance of tropical fire ants *Solenopsis geminata* at Ashmore Reef Commonwealth Marine Reserve, off the Kimberley coast, Australia. Recognising the management of invasive invertebrates is of crucial importance a pilot control program at Ashmore Reef commenced in 2011. We investigated the programs efficacy in reducing ant abundance and its effects on non-target species such as seabirds. Results of the study provide (i) important insight into the distribution and abundance of tropical fire ant populations at Ashmore Reef, (ii) valuable baseline data on seabird nest success rates at Ashmore Reef and (iii) guidelines for future monitoring and management of tropical fire ants, the effects of ant management and seabird nest success on isolated, oceanic islands.

Program Day 2

Wednesday 12th February

	Wednesday 12th February
0900	Graeme Wood – Keynote
0930	Ian Johnstone – Invited Speaker “The Maria Island Walk - valuing island conservation”
1000	Morning Tea (Chair – Sally Bryant)
1030	Elaine Stratford – Invited Speaker “Fluid Terrain: young islanders and the dilemma of sovereignty without territory”
1055	<u>Derek Ball</u> “The 4C approach to biodiversity conservation; public relations stunt, promising potential or panacea?”
1115	Ziegler, K., <u>Sheryl Hamilton</u> , Campbell, M., Scott, J.J., Campbell, V. “Volunteer-managed weed control and seabird monitoring programs on Tasmanian World Heritage Area’s Maatsuyker Island”
1135	<u>Katriona Hopkins</u> “African Boxthorn in the Furneaux Islands - Issues & Control”
1200	<u>Karenn Singer</u> “Bird’n’Nature Week – a model eco-tourism product?”
1220	Afternoon Tea (Chair Keith Morris)
1320	<u>Sue Robinson</u> & Znidarsic, L. “Promoting partnerships for island work and biosecurity awareness”
1340	<u>Hank Bower</u> “Restoring Lord Howe Islands’s ecosystems”.
1400	<u>Jo Ritchie</u> “Rotoroa Island - Rebuilding an island ecosystem in the Hauraki Gulf”
1420	<u>Saul Cowen</u> , Burbidge, A.H. & Sarah, J. Comer. “From refuge to resource: Bald Island and the Noisy Scrub-bird”
1440	<u>Michael Noble</u> & Karen Ziegler “Better understanding and managing African boxthorn (<i>Lycium ferocissimum</i>), a persistent national threat to island ecosystems”

1500	Afternoon Tea (Chair – Bob Pressey)
1530	<p><u>Bob Pressey</u>, Jana Brotánková, Ian Craigie, Lesley Gibson, Stephen Hall, John Hicks, Cheryl Lohr, Keith Morris, John Olds, Malcolm Turner, Amelia Wenger.</p> <p>“Conservation in paradise: prioritising management actions on islands in tropical Australia”</p>
1550	<p><u>Ian Craigie</u> & Bob Pressey.</p> <p>“The costs of conservation management on islands – developing a framework to understand and optimise spending”</p>
1610	<p>Wenger A.¹, Pressey, B.¹, Hicks J.^{2,3}, Turner M.², Olds J.³, Craigie, I.¹, Hall, S.¹</p> <p>“The use of expert elicitation in prioritizing conservation management actions”</p>
1630	<p><u>Jana Brotanova</u>, Bob Pressey, Ian Craigie, Steve Hall, Amelia Wagner</p> <p>“Towards a new software tool for conservation planning”</p>
1650	Dinner TMAG start 6:30pm

0900 Key Note Presentation; Graeme Wood

0930 Invited Presentation; Ian Johnstone: The Maria Island walk – valuing island conservation.

Maria Island is one of those remarkable islands that combines world heritage history, rare wildlife including a host of nationally threatened species and stunning scenic beauty. Founder of The Maria Island Walk, Ian Johnstone will describe how this Tasmanian family owned and operated business has grown into a national multi-award winning ecotourism experience, that promotes and protects the conservation values and community on the island and in the region.

1030 Invited Speaker; Elaine Stratford: Fluid terrain: young islanders and the dilemma of sovereignty without territory.

There is a growing body of writing on climate change impacts upon island nation states and subnational island jurisdictions, some of it highly critical of discourses that position islands as the (instrumentalized) symbols of global loss and the topographical equivalents of a red list of endangered species, their governments and peoples doomed mendicants. At the same time, scholars agree on the need to consider the challenges posed by the prospect that entire national populations may be left homeless and stateless as a result of climate change, and to reconceive of sovereignty to account for loss of territory from inundation and other effects of climate change. Until recently, much writing on such matters has made reference to children and young people primarily in the abstract, albeit important, terms afforded by discussions of intergenerational harm, rights, responsibilities, ethics, and impacts. Lately, welcome and growing attention has been given to the real dilemmas faced by young islanders in the face of climate change. Several common conclusions about the effects of climate change have been drawn in relation to children's increased exposure to risk, threat, and danger of malnutrition, loss of habitat and land, economic hardship, displacement, disaster, morbidity, combinations of cognitive, affective, and physical health issues, and general and pronounced insecurity. In such light, thinking about children and their 'place' in the life course, I ask *how might one think about the geographies, mobilities and rhythms of anthropogenic climate change in relation to young islanders and questions of citizenship?*

1055 The 4C approach to biodiversity conservation; public relations stunt, promising potential or panacea? Derek Ball

The endeavor of biodiversity conservation has seen at least three major changes over the previous 50 years; rebirth of human environmentalism, technological advances that better enable management interventions, and increased resources available to enact those. Despite these positive changes, the overall situation for biodiversity conservation is dire. An expanding number, and increasing geographical extent of threatening processes results in an ever-increasing number of species, ecosystems and whole landscapes at risk. Nevertheless, there are examples where biodiversity conservation is showing positive trends. This begs two questions: Do we continue to do the same things over and over again and expect to eventually get different results? Or, do we undertake a brutally honest post-mortem of conservation efforts undertaken to date, and then adopt what are demonstrably the most effective? This presentation cannot hope to undertake that review, but it may stimulate a collaboration that could. For now I make the observation that there appears one broadly consistent approach that is worth some consideration. An example is the 4C's as outlined by the Zeitz Foundation (although it has other guises): A holistic approach to Conservation through supporting Communities, respecting Culture and recognizing the human need to engage in Commerce. I suggest that this approach is particularly relevant to island management.

1115 Volunteer-managed weed control and seabird monitoring programs on Tasmanian World Heritage Area's Maatsuyker Island; Ziegler, K. Sheryl, Hamilton, Campbell, M., Scotott, J.J. & Campbell, V.

The volunteer group Friends of Maatsuyker Island, Wildcare Inc. (FOMI), makes a substantial contribution to maintaining the cultural and natural values of Maatsuyker. These achievements are due to a strong partnership with Tasmanian Parks and Wildlife Service and a committed, professional committee who fundraise and implement on-island and off-island projects. FOMI recently contributed to the maintenance of historic lightkeepers' houses which volunteers utilise during on-island projects. FOMI continues to build capacity by recruiting new volunteers and promoting its work to the wider community.

FOMI instigated an annual weed (blackberry, *Hebe elliptica*, *Montbretia*) control program in 2004. The outcome is protection of the unusual vegetation and significant seabird colonies from weed invasion. Following initial primary control, diligent follow-up is critical for the program's success. Monitoring shows a rapid return to good vegetation condition.

Maatsuyker has the third largest Short-tailed Shearwater colony in Tasmania (~800,000 pairs). Shearwaters had been excluded from weed-infested areas as they couldn't access the ground to establish nesting burrows. A shearwater population census and monitoring program, initiated in 2013, will enable measurement of the rehabilitation of such areas and an assessment of the weed program's importance.

FOMI implement biosecurity protocols essential for keeping Maatsuyker free of pest species.

1135 African boxthorn in the Ferneaux Islands – Issues and control;

Katriona Hopkins.

African Boxthorn (*Lycium ferocissimum*) is a declared weed of national significance in Australia (WONS). It forms vast thorny thickets, is coast & drought tolerant, and has become a rampant weed affecting all land tenures and uses - conservation, recreation, municipal, agricultural - on Flinders and the many smaller islands of the Furneaux archipelago at the eastern end of Bass Strait. Over the past 12 years, volunteer working bees organised by Wildcare group, the Friends of Bass Strait Islands (FoBSI), many in collaboration with Furneaux Landcare, have successfully controlled boxthorn on a number of off-shore islands and within coastal reserves on Flinders. Works coordinated by Aboriginal land managers continues also on off-shore islands including Babel, Chappel & Big Dog. Some Flinders Islands farmers are also working to eradicate boxthorn on their own properties and Flinders Council is working on a Strategic Plan for control. This presentation covers ecological impacts of infestations, vectors for spread, successful control methods, and documents efforts by the various land managers mentioned.

1155 Bird'n'Nature Week – a model eco-tourism product? Karenn Singer.

Christmas Island - one of nature's most impressive feats, a remote oceanic island full of natural wonders from the unique annual red crab migration to endemic birds and amazing marine life. However, many people would not recognise this aspect as it is now better known for its Detention Centre. The environment and way of life are vulnerable. Bird'n'Nature Week is the premier annual tourism event and brings together scientists including Mark Holdsworth, Tim Low, Dr Janos Hennicke, Dr Nic Dunlop and Dr Sue Robinson, citizen scientists from many places and the local community. This approach supports scientific endeavour, creates a better informed public and provides an economic contribution to the local community. 2013 Bird'n'Nature week will be remembered for 'boobygate' a media campaign, which went viral. The event is heading into its 10th year and researchers from Murdoch University are assessing the product with a view to looking at other tourism and conservation opportunities.

1320 Promoting partnerships for island work and biosecurity awareness; Sue Robinson and Znidarsic, L.

After confirming the presence of mice and rats on Fisher Island, the Wildcare group Friends of Fisher Island, sought ways to undertake the removal of these pests. In July 2013, with support from the local PWS team and project advice from ISB, the rodents were trapped and baited stations left on the island. Introduced rodents could have arrived by swimming from Flinders Island, 300m to the north, or with visitors arriving by boat. To raise awareness of rodents being transported by boat, FoFI, PWS and ISB arranged a presentation for students at the local school. Messages about pests on islands, impacts of rodents on the locally harvested short tailed shearwater, and to 'check your boat before you float' were presented. With government agencies taking more of an advisory role in land management, there is increasing scope for volunteer groups to undertake on-ground works and to bring messages about biodiversity conservation into the community.

1340 Restoring Lord Howe Island's ecosystems; Hank Bower.

Since 1979 the Lord Howe Island Board (LHIB) has been implementing a range of coordinated ecological restoration projects. These are working towards eradicating priority introduced pest plants, animals and diseases such as *Phytophthora* and implementing threatened species recovery actions to assist in the restoration of native habitats and ecological processes. The LHIB recognized that failure to implement restoration actions would result in further declines of species and their habitats.

Introductions of pest species commenced as early as the 1820's when passing sailors introduced pig (*Sus scrofa*) and goat (*Capra hircus*) as a source of food. Soon after settlement (1834) additional species were introduced including the feral cat (*Felis cattus*), rodents (*Rattus rattus* & *Mus musculus*) and a diversity of exotic plants. Introductions have continued through time but are now abated through stringent quarantine regulations.

In 1979 pigs and cats were eradicated, resulting in the successful recovery of the endemic and Endangered Lord Howe Island Woodhen (*Gallirallus sylvestris*). In 1999 all but three female feral goats were exterminated and are expected to die out within a few years.

The LHIB are currently implementing an eradication of African Big-headed Ants (*Pheilode megacephala*) from 20ha of within the settlement, an island wide weed eradication project targeting 30 priority pest plants using a systematic grid search approach and the eradication of Black Rat and House Mouse from the island. Meticulous planning and community consultation are underway to eradicate rodents.

Both the ABHA and weed eradication projects have achieved significant reductions and with ongoing resourcing are on target to deliver their eradication targets within 4 and 20 years respectively.

1400 Rotoroa Island – Rebuilding and island ecosystem in the Hauraki Gulf; Jo Ritchie.

Rotoroa Island is an 80ha island owned by the Salvation Army. It is presently being restored by the Rotoroa Island Trust who have a 99 year management lease. 400,000 native trees have been planted, a visitor centre has been built, buildings upgraded and a comprehensive animal and plant pest control programme is underway. The island was reopened to the public for the first time in 100 years in 2011.

The next stage of the project is to provide a pest free environment where native species can be reintroduced and a conservation education programme established which provides outdoor learning opportunities for primary and secondary school students.

The Rotoroa Trust has recently entered into a partnership with Auckland Zoo to implement these objectives.

Eradication of rodents, implementing a cost effective and sustainable biosecurity programme, working with iwi and the wider community, integrated translocation programmes and challenging traditional methods and providing exciting and memorable learning experiences in an island environment for school children are important aspects of the long term management of Rotoroa Island.

1420 From refuge to resource: Bald Island and the noisy scrub-bird; Saul Cowen, Burbidge, A.H. & Sarah, J. Comer.

Translocations of threatened species to islands may provide a refuge from a range of threats, potentially allowing sufficient recovery to permit the insular population to become a source itself for future translocations. The Noisy Scrub-bird (*Atrichornis clamosus*) is an endangered songbird restricted to the south coast of Western Australia and translocations have played a key role in this species' recovery. The translocated population on predator-free Bald Island was founded by just eleven individuals, but unprecedented growth over the last two decades has meant this population is now among the most significant. Between 2010 and 2012 the island population has been used for translocations back to the mainland, with some success. However, the failure of one translocation through predation reflects the challenge that inherent naivety may represent when translocating individuals from predator-free islands. Furthermore, small island populations may also be at risk of reduced genetic diversity through drift

and inbreeding. However, despite Bald Island having the lowest diversity, the levels of inbreeding are the least significant of any scrub-bird population making it a strong candidate as a source for translocation. In addition, high levels of adaptive diversity indicate that this species may be well adapted to survival in small isolated populations.

1420 Better understanding and management African boxthorn (*Lycium ferocissimum*), a persistent national threat to island ecosystems; Michael Noble & Karen Ziegler.

African boxthorn (*Lycium ferocissimum*) is found on or threatening potential establishment on, high conservation value islands through much of temperate and sub-tropical Australia. Boxthorn has an island presence from Faure Island in Shark Bay World Heritage Area (WA), southward right around the southern coastline of Australia, and back up at least as far north as Norfolk and Lord Howe Island islands (NSW).

Impacts of African boxthorn on island ecosystems include displacement of indigenous vegetation, alteration of vegetation community structure, and provision of harbor for pest animals. Along with these are direct impacts on native fauna. Sea birds and shore birds become fatally ensnared in boxthorn. Boxthorn roots make burrowing more difficult for short-tailed shearwaters (*Puffinus tenuirostris*). Sea lions (*Neophoca cinerea*) have reduced access to islands for pupping, and seal (*Arctocephalus* spp.) pups are left more vulnerable to predation, when boxthorn displaces native nitre bush (*Nitraria billardierei*) that affords superior protection.

Containment and eradication of African boxthorn is very difficult, particularly as it is spread by birds. Research on best practice management of African boxthorn indicates the need for a carefully planned approach, followed by a program of management incorporating consistent, programmed follow-up for up to five to ten years.

1530 Conservation in paradise: prioritising management actions on islands in tropical Australia; [Bob Pressey](#), Jana Brotánková, Ian Craigie, Lesley Gibson, Stephen Hall, John Hicks, Cheryl Lohr, Keith Morris, John Olds, Malcolm Turner, Amelia Wenger.

This presentation describes the rationale, methods and expected results of two closely associated research projects. A team at James Cook University is collaborating with Queensland Parks and Wildlife, the Great Barrier Reef Marine Park Authority, and the Western Australian Department of Parks and Wildlife to develop a decision-support tool for management of islands in the southern Great Barrier Reef and off the Pilbara coast. Both projects involve island managers in the design of the tool and the collection of data. The operational model for the decision-support tool attempts to approximate, within the limits of reliable information, the full complexity of the decision-making process. The model considers spatially explicit data on biodiversity features, threats, and the effectiveness and cost of alternative management actions. Sub-models address dynamics of threats (e.g. management actions on one island mitigating risk on others), costs (e.g. dependence on field itinerary and number of islands visited), and actions (e.g. recognition that not all actions will be fully implemented). Underway are development of the prototype software and intensive elicitation of data from managers and other experts. Work planned for 2014 includes analysis of the sensitivity of priorities to uncertainties around parameter values and missing data.

1550 The costs of conservation management on islands – developing a framework to understand and optimise spending; [Ian Craigie](#) & Bob Pressey.

The costs of conservation management actions are never far from the mind of managers who need to maximise ‘bang for the buck’ with budgets that are often inadequate. Yet financial costs are often one of the least understood aspects of conservation plans and projects, which are often written without direct reference to their costs. Conservation on islands is logistically challenging and practically complex, so optimising spending to achieve multiple objectives on multiple islands over a number of years requires a framework to allow us to move beyond the current ‘back of the envelope’ calculations, which can lead to missed opportunities to maximise spending efficiency and reduce costs. Here I present a preliminary framework for thinking about management costs on

islands using data collected from islands in the Pilbara region of WA and central Great Barrier Reef. I highlight the kind of data that are required for optimising spending and discuss some of the gaps that are often present in current plans. In future this work will be integrated into larger decision support and prioritisation systems for maximising conservation outcomes for native fauna on Western Australian and GBR islands.

1610 The use of expert elicitation in prioritizing conservation management actions; Wenger A., Pressey, B., Hicks J., Turner M., Olds J., Craigie, I., Hall, S.

Managers of the Great Barrier Reef's (GBR) islands face difficult decisions when it comes to prioritising conservation management actions. The islands contain a wide variety of natural and cultural values, which face multiple and dynamic threats. The threats have to be managed within a fixed budget, using actions with varying levels of effectiveness and costs. In order to improve management decision making on islands, we are collating existing data on features, threats, and management actions for a subset of islands and cays in the southern GBR. As with most environmental datasets, there are large knowledge gaps, relating not only to species, ecosystems and threatening processes, but also to the costs and effectiveness of management actions. To address these gaps, expert elicitation is necessary to improve the content and the reliability of the datasets. Expert opinion can provide valuable first-hand information about local environmental issues when little published information exists. However the quality of the data collected from experts is highly dependent on the design and execution of expert elicitation process. Here I will present the latest thinking in expert elicitation techniques and share lessons from our experiences of eliciting data from GBR managers.

1630 Towards a new software tool for conservation planning; [Jana Brotanova](#), Bob Pressey, Ian Craigie, Steve Hall, Amelia Wagner

In a dynamic world, the process of prioritizing where to invest limited conservation resources is extremely complex. It needs to incorporate information on features (species, or landforms), planning units, ongoing or predicted future threats, and the costs and effectiveness of potential conservation actions. Extended research has been conducted on the spatial and temporal conservation prioritization using software tools such as Marxan, C-Plan, and Zonation to aid managers in their decision-making process.

However, these tools are limited in various ways in addressing the full complexity of day-to-day management decisions. Some tools fail to consider variation in: land values in space and time; multiple threats and their spatio-temporal variations; multiple conservation actions applied to individual areas; the feasibility, effectiveness, and varying costs of actions; and the dynamic nature of biodiversity responses in space and time. Optimizing such a multi-dimensional system is a large challenge in complexity mathematics. What is needed is a new software tool that builds on current approaches, but allows for more realistic scenarios as described above, developed and parameterised in close collaboration with managers. This includes the modification of existing tools and the creation of new algorithms. The new software will be trialled in conservation planning exercises for islands in north-western Western Australia and the Great Barrier Reef.

1650 [Close](#)

Program Day 3

Thursday 13th February

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0900	David Bowman – Keynote “Global Environmental Change and Conservation Biology – imagining the unthinkable and acting.”
0930	Phil Wise – Invited Speaker “Translocation of the Tasmanian Devil to Maria Island.”
1000	Morning Tea (Chair Alan Saunders)
1030	Bill Waldman – Invited Speaker tba
1055	Keith Morris - Invited Speaker “The ecological restoration of Dirk Hartog Island”
1125	<u>Keith Broome</u> , Richard Griffiths, Phil Brown & Fin Buchanan. “Multispecies invasive mammal eradication on Rangitoto and Motutapu Islands, Hauraki Gulf New Zealand”
1145	Tony Friend “Eradicating the house mouse from Boullanger and Whitlock Islands, Western Australia – challenges and solutions”
1205	David Kelly “Towards the eradication of the invasive African big-headed ant, <i>Pheidole megacephala</i> from Lord Howe Island”
1225	Lunch (Chair – Stephen Harris)
1320	Kate Helmstedt “Prioritizing eradications on islands: should we take it all or are there other options?”
1340	<u>Chris Baker</u> & Bode, M. “Temporal optimisation of invasive species eradication”
1400	<u>Michael Bode</u> , Chris Baker & Michaela Plein

	"Scheduling the insular eradication of multiple species"
1420	Springer, K, <u>Whinam</u> , J, Carmichael, N & Alderman, R. "Macquarie Island pest eradication program – outcomes, recovery and lessons learnt."
1500	Afternoon Tea (Chair – Ray Nias)
1530	<u>Leslie Gibson</u> "Biogeographic patterns on Kimberley islands, Western Australia"
1550	Jennifer L. Lavers, Mark G. R. Miller, Michael Carter, George Swann, and Rohan H. Clarke "Identifying Marine Protected Areas for seabird conservation in the Timor Sea"
1610	Nicholas Carlile and David Priddel "Using surveillance cameras to monitor seabird populations"
1630	<u>Speed Presentations</u> Nichol White & <u>Dorian Moro</u> "Genetic resilience of an island population of the native rodent (western chestnut mouse) affords reintroduction opportunities" <u>Amanda Edworthy</u> "Causes of decline in island versus mainland populations of endangered forty-spotted pardalotes" <u>Melissa Houghton</u> "Non-native invertebrate introductions to Macquarie island: detection and management implications"
1650	Discussion & Close

0900 Key Note Presentation; David Bowman: Global environmental change and conservation biology – imagining the unthinkable and acting.

0930 Invited speaker; Phil Wise: Translocation of the Tasmanian Devil to Maria Island.

A fatally infectious cancer, devil facial tumour disease (DFTD) threatens the Tasmanian devil with extinction. In efforts to protect the species a captive population has been established. Since 2012, twenty eight captive Tasmanian devils have been translocated to an offshore island to maintain a wild population free from DFTD. Prior to translocation, suitability of island selection, ecosystem risk assessments and disease risk assessments were undertaken. Field surveys were carried out to establish baseline data on wildlife populations of the island. Health and behavioural assessments of the selected devils were performed. The population has been regularly monitored using radio-telemetry, remote cameras and live-trapping. Breeding has been successful for the established founders with weaned young now having been produced on the island. Our study illustrates the importance of a multidisciplinary and ecosystem approach when using translocations for managing endangered species and highlights the critical role captive breeding can play in preventing species extinction.

1030 Invited Speaker; Bill Waldman

1055 Invited Speaker; Keith Morris: The ecological restoration of Dirk Hartog Island

Dirk Hartog Island is the largest WA island (62,000ha) and became a National Park in 1999. Prior to that it was a pastoral lease for 140 years. An ecological restoration project commenced in 2012 and this is focussing on the eradication of goats, sheep and feral cats prior to the reintroduction of 10 native mammals and conservation introduction of another 2 threatened mammals. In addition, a weed management plan has been prepared, prioritising a control and eradication program for the 45 weed species on the

island. Management issues include risks associated with successfully eradicating goats and feral cats from a large island, gaining access to the island, liaison with and gaining support of the 4 other land owners / managers on the island, the relatively large numbers of public who access the island by boat, and preventing further incursions of exotic species. A community engagement strategy has been implemented, and biosecurity protocols developed for DPaW staff and contractors. A biosecurity implementation plan is also being developed to facilitate the uptake of biosecurity protocols by the other land owners/managers and island visitors. This project has the potential to improve the conservation status of several threatened mammals, restore vegetation communities to pre-pastoral conditions and attract scientific investigation from around the world.

1125 Multispecies invasive mammal eradication on Rangitoto and Motutapu Islands, Hauraki Gulf New Zealand; Keith Broome, Richard Griffiths, Phil Brown & Fin Buchanan.

Rangitoto Island (2311 ha) is Auckland's youngest volcano. It has unique vegetation growing on basaltic lava and receives 100,000 visitors per year. Motutapu Island (1509 ha) developed as pastoral farmland is linked to it by a causeway. The goal of this project was to contribute to the restoration of the islands by eradicating the remaining pest animals. The design had 4 broad phases: 1. Preparation and set up; 2. Knockdown using poison baits; 3. Follow-up using ground based techniques targeting each species expected to survive in priority order; 4. A monitoring and rapid response phase which searched for, and retained capability to respond to - new evidence of survivors. Leading on from phase 4 was a transition into ongoing biosecurity surveillance and incursion response. At least seven and possibly eight species of mammalian pest have been eradicated from the islands. This project demonstrates the capability of DOC staff to successfully deliver a complex multispecies eradication with high community interest. The challenge of sustaining the necessary biosecurity is being met thus far and the biological outcomes continue to develop. Threatened species are being introduced to the islands and others are self-introducing. The project has received outstanding support from the public.

1145 Eradicating the house mouse from Boullanger and Whitlock Islands, Western Australia – challenges and solutions; Tony Friend

Boullanger and Whitlock Islands are home to the endangered dibbler *Parantechinus apicalis* and the grey-bellied dunnart *Sminthopsis griseoventer*, as well as six skink species and two geckos. At least fifteen bird species breed there, including the burrow-nesting wedge-tailed shearwater *Puffinus pacificus* and white-faced storm-petrel *Pelagodroma marina*. House mice *Mus musculus* were introduced prior to 1960 and a recent study showed that they compete with dibblers for food in winter, concluding that this competition will intensify as climates warm.

Feasibility studies were conducted into the eradication of house mice from both islands, which are separated by a shallow channel approximately 150 metres wide. Trials were conducted to determine non-target uptake of non-toxic Pestoff 20R bait pellets and their breakdown time. Dibblers and the larger skinks (King's skinks *Egernia kingii* and Jurien Bay skinks *Liopholis pulchra longicauda*) eat the baits and both dibblers and silver gulls *Larus novaehollandiae* take dead mice.

Eradication of the house mouse is proposed, using Pestoff 20R after establishment of captive groups of dibblers, King's skinks, Jurien Bay skinks and bull skinks *Liopholis multiscutata* bos. Whitlock Island (5 ha), where the only sensitive species are dibblers and Jurien Bay skinks will be treated in the first year and Boullanger (31 ha) the following year.

1205 Towards the eradication of the invasive African big-headed ant, *Pheidole megacephala* from Lord Howe Island; David Kelly

The Lord Howe Island Board is undertaking a program to eradicate the African big-headed ant (*Pheidole megacephala*) from Lord Howe Island. *P. megacephala* is listed among the world's 100 worst invasive species, by the World Conservation Union and is listed as a key threatening species under the *Environment Protection and Biodiversity Conservation Act 1999*.

Since 2012, the Board has carried out a comprehensive review of the eradication program focussing on lessons learnt from previous failed attempts to eradicate the ant from the island, development of a work plan to guide the eradication with involvement and supervision by ant eradication experts, training to increase local capacity, and implementation of best practice techniques for systematic surveys, treatment, control of movements within infested areas, recording and monitoring.

Interestingly, there has been general support for the program in comparison to other planned eradications and this is thought to be a result of the program evolving over a number of years from control to an eradication. The strategy recognises that the successful eradication of *P. megacephala* requires access to *all* properties and requires baiting within every building within the infested areas.

Over the last 12 months, a number of aspects of the eradication program have been improved including the use of alternative chemicals for indoors and cropping areas. The Board has worked closely with other state government agencies (NSW Department of Primary Industries) to instigate a control order over the Island allowing the Board access to leases where voluntary consent is not obtained to treat mapped infestation areas.

Monitoring has demonstrated eradication has been achieved throughout most of the treated areas, thereby allowing these areas to undergo natural restoration. Preliminary studies of differences in the invertebrate faunas of treated and untreated areas within the settlement area have shown that there is no persistence of any potential impacts of *P. megacephala*, and no detectable non-target treatment effects.

The eradication program is expected to run for a further 3-4 years, including a minimum of 2 years following the final detection. Recommendations are provided including further improvements, particularly in terms of research, biosecurity, communication and community involvement.

1320 Prioritizing eradications on islands: should we take it all or are there other options? Kate Helmstedt

We propose a general method for prioritising the eradication of multiple invasive species across multiple islands. Rather than focusing on islands as management units, this method prioritises portfolios of eradication actions targeting different subsets of invasive species. This better reflects the variety of options available to managers, and the range of ecological dynamics that can result from perturbing an insular system. In doing so our method reveals efficiencies in cost not possible with coarser prioritisation methods.

1340 Temporal optimisation of invasive species eradication; [Chris Baker](#) & Bode, M.

Once an invasive species has a strong foothold across Australia, it becomes too expensive to eradicate the species. However, we can eradicate invasive species which are confined to islands. Invasive species eradications on islands are becoming common, but there has been minimal work on how to adjust eradication efforts through time. We would like to be able to eradicate invasive species with the smallest possible cost. This kind of question is very hard to answer experimentally, so we have modelled how eradication efforts affect invasive species populations to find optimal eradication strategies.

1400 Scheduling the insular eradication of multiple species; [Michael Bode](#), Chris Baker & Michaela Plein

Many islands have been invaded by multiple invasive species. Eradication planning is complicated by interactions between invasives, and by interactions between invasives and native species. In the past, such complications have led to trophic cascades that have undermined conservation objectives. We formulate a general method for cost-effectively eradicating multiple species from island ecosystems without threatening native species. We apply this method to previously parameterised models of insular ecosystems with multiple invasives.

1420 Macquarie Island pest eradication program – outcomes, recovery and lessons learnt; Springer, K, Whinam, J, Carmichael, N & Alderman, R.

The presence of invasive vertebrate species on sub-Antarctic Macquarie Island has had devastating impacts on the island's flora, fauna and landforms. Previous eradication projects removed weka *Gallirallus australis* by 1989 and feral cats *Felis catus* by 2001. European rabbits *Oryctolagus cuniculus* (which reached a maximum population of 150,000) have been subject to control efforts since the 1960s.

Funding of AUD\$24.7M was secured in 2007 for a multi-year project based on aerial baiting targeting rabbits and rodents, followed by hunting surviving rabbits with ground-based techniques. A planned 2010 aerial baiting application had to be abandoned due to shipping delays and poor weather. Concerns over non-target species mortality resulting from this attempt led to renewed consideration of mitigation options. Rabbit Haemorrhagic Disease Virus (RHDV) was used in February 2011 to reduce the pre-baiting rabbit population and thus minimise toxic rabbit carcasses available to scavenging seabirds. Aerial baiting resumed in May 2011 and was completed by July 2011. The rabbit hunting phase commenced in August 2011 using hunters and dogs and is on-going, with 13 rabbits subsequently located. Rodent detection dogs have been deployed since March 2013 and no rodents have been detected post-baiting.

Two years after baiting vegetation recovery is already evident in the palatable megaherbs and *Poa foliosa* tussocks, although less palatable native species such as *Acaena magellanica* are now widespread across the landscape. The introduced *Poa annua* has benefitted from rabbit disturbance but is likely to be replaced by native species in the medium term. The burrowing petrel community, a key beneficiary of the eradication program, is already showing signs of recovery with significant re-colonisation and population increases documented for several species, notably the Grey and Blue petrels.

1530 Biogeographic patterns on Kimberley islands, Western Australia;

Leslie Gibson

The near-pristine islands along the Kimberley coast of north-western Australia are important natural refuges. Between 2007 and 2010, 24 of the largest of these islands were surveyed for mammals, reptiles, birds, frogs, land snails and vascular plants. I examined congruence in the biogeographic patterns among these taxonomic groups and related those to island-wide attributes. A high level of congruence in both spatial patterns of species richness and community similarity across most of the taxonomic groups was found. Congruence in species richness was best explained by a strong relationship with island area; while congruence in community similarity was influenced by the dispersal ability of taxa. Average annual rainfall and ruggedness were also strong correlates of both spatial patterns in community similarity and richness of regional endemics. I also show that this pattern was not explained by richness differences of species among islands alone, but largely due to species replacement between islands. These patterns reflect the greater diversity of regional endemic species and/or habitat specialists that are restricted to the relatively high rainfall and extensively rocky islands; whereas the drier islands typically support widespread generalists that have distributions that extend into the semi-arid and arid zones.

1550 Identifying Marine Protected Areas for seabird conservation in the Timor Sea; Jennifer L. Lavers, Mark G. R. Miller, Michael Carter, George Swann, and Rohan H. Clarke

Australia has adopted a national system of representative marine protected areas (MPAs). However, some important and unique features have been excluded, such as seabird islands which also serve as key marine mammal haul-out sites. Understanding spatial and temporal variability in the distribution of seabirds is fundamental to the conservation and management of marine ecosystems and designation of MPAs. We used ship transect data collected during October 2000 to April 2013 and oceanographic variables (sea surface temperature, chlorophyll a concentration, and bathymetry) to predict the occurrence of 18 seabird species in the Browse Basin and evaluate the performance of a range of predictive models. An ensemble model that combined results from the four other modeling techniques was robust and confirmed the existence of

species richness hot spots that varied little across the wet and dry season, typically located within 150 km of Adele Island and Ashmore Reef, two of the largest seabird breeding colonies in the region. Model performance was greatest for three migratory (non-resident) species. The results highlight the value of at-sea surveys and distribution models for identifying important foraging grounds for non-resident species that may benefit greatly from localised protection on their non-breeding grounds. The establishment of marine protected areas for seabirds should be included in the national system, particularly in light of the increasing number of oil and gas exploration projects adjacent to key breeding islands in the Browse Basin.

1610 Using surveillance cameras to monitor seabird populations; Nicholas Carlile and David Priddel

The emergence of robust surveillance (trail) cameras has created the potential for seabird populations to be monitored remotely and cheaply. The effectiveness of this technique depends entirely on what questions are posed and whether the cameras can capture the visual data required. Trigger mechanisms detect either motion or infrared (heat). Nest sites and nesting behaviours of different species present different challenges, with battery power and data storage capacity of the camera often limiting the choice of options. Some species do not lend themselves to this kind of remote monitoring. We present attempts to monitor three species of seabird in three different nesting habitats on Lord Howe Island: Masked Booby on an island plateau, White Tern on tree limbs and Grey Ternlet on cliffs.

1630 Speed Presentations

Nichol White & Dorian Moro; Genetic resilience of an island population of the native rodent (western chestnut mouse) affords reintroduction opportunities

Islands present a challenging paradox in reintroduction biology. On the one hand, they act as refugia for species whose mainland populations have declined or become extinct. Alternatively, island populations may exhibit genetic consequences of long-term

isolation that are often viewed by reintroduction biologists as poor sources of founding individuals. In a genetic study of the western chestnut mouse (*Pseudomys nanus*) from Barrow Island, Western Australia, its population genetics reflects that of a widespread species with high levels of heterozygosity and low levels of inbreeding. Results for Barrow Island are in contrast to the low mtDNA and microsatellite genetic diversity observed for other island species. We hypothesise that small murids on large islands, with a high fecundity and effective population size such as the Barrow Island mouse, remain buffered from the genetic consequences of their isolation compared with other insular mammals. The implications of these findings for reintroduction biologists are that island populations for this or similar species should not be assumed to be genetically-poor when mainland populations exist simply because of their isolation. Conservation managers may be justified to source founders from either location to support reintroduction programs where low island-mainland genetic separation has been found to occur, or where species have naturally-high effective population sizes.

Amanda Edworthy; Causes of decline in island versus mainland populations of endangered forty-spotted pardalotes

Forty-spotted pardalotes have declined by 60% in the past twenty years. Their main populations occur at Maria and Bruny Islands with remnant populations on mainland Tasmania near Bruny Island. Forty-spotted pardalotes are strong habitat specialists, relying on white gum trees for foraging and tree hollows for nesting. Many potential threats to forty-spotted pardalotes apply to both island and mainland populations, including nest hollow limitation, habitat loss, high parasite loads, introduced predators, expanding competitor distributions, and inbreeding depression. However, the dramatic decline on mainland Tasmania in comparison to relatively healthy populations at Bruny and Maria Islands, suggests that differences in predation (e.g., sugar gliders) or competition (e.g., noisy miners) exist between these areas. I studied factors affecting breeding density and nest success of forty-spotted pardalotes. Fly parasites were the major cause of mortality in nestlings. Nest hollows appeared to limit breeding density; forty-spot nest densities were higher at sites with boxes than sites without boxes. Predation rates were low at island populations, but are uncertain on the mainland, where the greatest declines have occurred. My initial results suggest that parasitism and nest hollow limitation may be important factors limiting population growth, but the island-mainland difference is still unexplained.

Melissa Houghton; Non-native invertebrate introductions to Macquarie island: detection and management implications

Non-native species pose a threat to sub-Antarctic island biodiversity. Currently there are XX established non-native invertebrate species across the sub-Antarctic islands. Here we have quantified the unintentional introduction of non-native invertebrates to the sub-Antarctic and Antarctic region. We examined invertebrate specimens collected in cargo, on ships and research stations during transfers to Macquarie Island and Antarctica. Furthermore, we implemented a stratified trapping program on supply vessels and at wharf facilities during the 2012-13 field season.

Over 1250 individuals were detected or captured from over 50 different families - many of them alive. Families of moths (Noctuidae) and small flies (Phoridae) were the most detected. Food and large cargo items were shown to transport the most individuals. Several non-native taxa, previously recorded or established on Macquarie Island, were shown to be repeatedly introduced over 13 years.

Our work shows that even with strict biosecurity protocols, a taxonomically diverse suite of non-native invertebrates can be introduced to sub-Antarctic islands. Improved biosecurity protocols are required to reduce the risk of alien species' impacts on sub-Antarctic and Antarctic terrestrial biodiversity. We highlight some of the new management initiatives adopted to address these threats.

Posters

Cheryl Lohr, Ricky Van Dongen, Bart Huntley, Lesley Gibson & Keith Morris – “Vegetation change on the Montebello islands before and after rodent eradications and native fauna reintroductions”

The Montebello archipelago consists of approximately 150 islands; 80km from the north-west coast of W.A. Before 1912 the islands had a diverse terrestrial fauna. By 1952 several species were locally extinct. Between 1950 and 1992 the islands were a prohibited site following atomic weapons testing. In 1992 the islands became a priority for restoration. Between 1996 and 2011 rodents and cats were eradicated, and 5 mammal and 2 bird species were translocated to the islands. Despite changes to the fauna assemblage, limited monitoring of the broader terrestrial ecosystem has occurred. We used 20 dry-season Landsat images from 1988 to 2013 to assess change in vegetation density over time. The imagery was converted to a cover index and

processed using CSIRO software “Veg Trend”. Preliminary analysis of data averaged across the 25-year period suggests that 1433ha out of 1818ha (78.8%) have increased in vegetation cover by up to 30%, 358ha (19.7%) have remained stable and 27ha (1.5%) have declined in vegetation cover. Time-series analysis completed in Brodgar 2.7.1 suggests a flex-point in the data with relatively stable values prior to 1996, and increasing vegetation cover following the initial rodent baiting. Field work to ground-truth imagery will occur in September 2013.

Dorian Morro & Pat Cullen – “Termite mounds on Barrow Island: islands within an island”

Following the dismantling of each mound and thorough searches, we found that termitaria on Barrow Island are particularly useful as habitat for almost half (26 species) of the known reptile species known from past surveys on the island, and also as shelter for small mammals (four species).

We suggest that management plans to clear vegetation and other habitat where termitaria occur should embed practices to either avoid the destruction of these mounds, or embrace practices to dismantle them prior to vegetation clearing activities. This approach is especially important on islands where termite mounds act as refugia for many vertebrate species where habitat